

# SLIDING-WINDOW MULTI-CARRIER FREQUENCY DIVISION MULTIPLEXING SYSTEM

## Abstract of the Disclosure

5 A sliding-window multi-carrier communication system is described, wherein the  
carriers are orthogonal in a local sense, but not necessarily in a global sense. In one  
embodiment, the system allows a reduction of the length of the basis function time as  
compared to conventional OFDM systems. In some circumstances, the symbol time can  
be reduced almost to the basis function length even though the delay spread from  
channel-to-channel is significant. In one embodiment, a discrete Fourier transform DFT  
10 is used in the sliding-window receiver. In one embodiment, the DFT produces  $M$   
outputs (one output for each of  $M$  channels) for each time-domain input. In one  
embodiment, the DFT produces outputs for  $M$  channels from  $N$  samples, where  $N$  is a  
basis function length. In one embodiment, the sliding-window receiver provides an  
adjustable basis-function length. In one embodiment, the basis-function length can be  
15 separately selected for each channel. In one embodiment, the sliding-window receiver  
provides independent equalization for each channel by extracting equalization  
information from a packet header.

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